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University of Colorado Boulder
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Google Scholar: http://scholar.google.com/citations?hl=en&user=A8K0LGEAAAAJ
ResearcherID: https://publons.com/researcher/AFU-6920-2022/

Experience

VISITING SCIENTIST
CSIRO ENERGY CENTRE — NEWCASTLE, AUSTRALIA — JANUARY 2022 – JULY 2022

Visiting scientist in research group on energy systems, addressing challenge of transitioning Australia's current centralised electricity grid system to a low-emissions, more distributed future state, while maintaining energy affordability and reliability.

SENIOR RESEARCHER
EURAC INSTITUTE FOR RENEWABLE ENERGY — BOLZANO, ITALY — JULY 2021 – DECEMBER 2021

Visiting scientist in research group focusing on hybrid and efficient heating and cooling systems for buildings, sustainable districts, and their integration in industrial processes utilizing electrically and thermally driven heat pumps.

INTERIM CO-DIRECTOR
RENEWABLE AND SUSTAINABLE ENERGY INSTITUTE — BOULDER, COLORADO — JULY 2020 – JUNE 2021

ASSOCIATE DIRECTOR
RENEWABLE AND SUSTAINABLE ENERGY INSTITUTE — BOULDER, COLORADO — JULY 2017 – JUNE 2020

Providing leadership in the development and execution of sponsored research programs; mentor junior faculty and facilitate R&D partnerships between all UC Boulder faculty and potential collaborators at NREL with expertise in building systems, building efficiencies and other renewable and sustainable research topics.

VISITING SCIENTIST
INSTITUTE FOR PROSPECTIVE TECHNOLOGICAL STUDIES — SEVILLA, SPAIN — OCTOBER 2014 – JUNE 2015

Visiting scientist in research group providing global long-term (100 year) energy forecasting and analysis as part of the European Commission's Joint Research Center.

VISITING PROFESSOR
UNIVERSIDAD DE SEVILLA — SEVILLA, SPAIN — SEPTEMBER 2014 – JUNE 2015

Visiting professor in Department of Electrical Engineering with focus on building-to-grid integration and electric grid innovation.

JOINT PROFESSOR
NATIONAL RENEWABLE ENERGY LABORATORY — GOLDEN, COLORADO — OCTOBER 2013 –PRESENT

Joint appointment in the Commercial Buildings Research Group

AREN FACULTY DIRECTOR
UNIVERSITY OF COLORADO — BOULDER, COLORADO — JULY 2012 –JUNE 2014

AREN Faculty Director for Department of Civil, Environmental and Architectural Engineering

ASSOCIATE CHAIR
UNIVERSITY OF COLORADO — BOULDER, COLORADO — JULY 2010 – JUNE 2012

Associate Chair for Department of Civil, Environmental and Architectural Engineering

FOUNDER & CHIEF SCIENCE OFFICER
QCOEFFICIENT, INC. CHICAGO, ILLINOIS JULY 2008 – PRESENT
Founder and chief science officer for Chicago-based company developing model predictive control solutions to integrate commercial building HVAC operation with electric grid operations.

PROFESSOR
UNIVERSITY OF COLORADO BOULDER, COLORADO AUGUST 2008 – PRESENT
Faculty member in the Building Systems Engineering Program of the Department of Civil, Environmental and Architectural Engineering in the College of Engineering and Applied Science at the University of Colorado. Teaching focus on thermal environmental engineering, mechanical systems design, building control and automation systems, advanced solar systems, applied data analysis for energy scientists and engineers, as well as sustainable building design. His research includes model predictive optimal control of building energy systems and building thermal mass, control strategies for mixed-mode buildings that incorporate both natural and mechanical ventilation, uncertainty quantification of occupant behavior and its impact, occupancy detection using distributed sensor networks as well as the integration of building energy system operations with the electric grid system.

VISITING SCIENTIST
FRAUNHOFER INSTITUTE FOR SOLAR ENERGY SYSTEMS FREIBURG, GERMANY SEPTEMBER 2005 – JULY 2006
a) Solar Buildings Group: 1) Impact of adaptive comfort criteria and heat waves on optimal building thermal mass control. 2) Primary energy and comfort performance of ventilation assisted thermo-active building systems in continental climates.
b) Fuel Cell Group: Heat transfer analysis of a micro-reformer fuel cell system (μ-RFCS).

VISITING PROFESSOR
UNIVERSITY OF APPLIED SCIENCES BIBERACH BIBERACH, GERMANY SEPTEMBER 2005 – JULY 2006
Teaching responsibility for courses in heat and mass transfer, control theory, as well as building energy system modeling and simulation. Developed two new courses in computational intelligence in control engineering as well as modeling and system theory.

VISITING SCIENTIST
SIEMENS BUILDING TECHNOLOGIES ZUG, SWITZERLAND MAY 2005 – AUGUST 2005
a) HVAC Laboratory: Measured and recommended modifications for the radiative/convective split of sensible heat gains from cooling load simulators and human subjects for spaces employing thermo-active building structures (concrete core conditioning) using scanning net radiometry.Investigated air velocity dependence of relative humidity sensors. b) Energy Controlling and Monitoring: Analysis and recommendation for enhancements.

ASSOCIATE PROFESSOR
UNIVERSITY OF NEBRASKA – LINCOLN OMAHA, NEBRASKA FALL 2004 – JULY 2008

VISITING PROFESSOR
TECHNICAL UNIVERSITY OF DRESDEN DRESDEN, GERMANY AUGUST – SEPTEMBER 2002
Research exchange at the Institute of Thermodynamics and Building Systems Engineering to collaboratively develop an approach for the real-time predictive optimal control of combined active and passive building thermal storage inventory.

ASSISTANT PROFESSOR
UNIVERSITY OF NEBRASKA – LINCOLN OMAHA, NEBRASKA OCTOBER 1999 – SUMMER 2004
Founding faculty member of the Architectural Engineering Program in the College of Engineering at the University of Nebraska – Lincoln. Responsibilities include assisting in the development of the Architectural Engineering curriculum for the B.S., M.Eng., M.A.E., and Ph.D. degrees, developing and teaching undergraduate and graduate courses, recruiting and advising students, and establishing a research and an international exchange program.

ENERGY ENGINEERING MANAGER
JOHNSON CONTROLS, INC. ESSEN, GERMANY OCTOBER 1998 – SEPTEMBER 1999
Manager of engineering department responsible for energy engineering activities in Germany. Duties included project coordination, customer relations, quality assurance, standardization of business processes, and strategic planning.

PROJECT MANAGER
JOHNSON CONTROLS, INC. FRANKFURT, GERMANY OCTOBER 1997 – SEPTEMBER 1998
Development of a building energy performance monitoring database management system suitable for continuously monitoring and analyzing large groups of remote building sites over multiyear periods.

ENERGY ENGINEER
JOHNSON CONTROLS, INC. ESSEN, GERMANY JANUARY 1996 – SEPTEMBER 1997
Responsible for energy engineering in start-up energy savings performance contracting (ESPC) group. Tasks included energy analysis of more than 40 commercial buildings throughout Europe, development of strategies to improve energy utilization and decrease utility costs including financing procedures.

POST-DOCTORAL ASSISTANT
UNIVERSITY OF COLORADO BOULDER, COLORADO JULY 1995 – DECEMBER 1995
Development of a predictive optimal controller for thermal energy storage systems subject to uncertainty in thermal loads, ambient conditions, and underlying system models.

RESEARCH ASSISTANT
UNIVERSITY OF COLORADO BOULDER, COLORADO JANUARY 1993 – JUNE 1995
(1) Development of optimal control strategies for ice storage systems in commercial building cooling plants and comparison of their performance with conventional controls. (2) Experiments on the performance and robustness of direct digital control systems in a large-scale HVAC laboratory.

TEACHING ASSISTANT
TECHNICAL UNIVERSITY OF BERLIN BERLIN, GERMANY MAY 1990 – MARCH 1992
Assisted in courses in thermodynamics and renewable energy sources. Generation of a simulation model and setup of a digital data acquisition system for a solar domestic hot water system.

RESEARCH ENGINEER
EMS CHEMIE AG DOMAT/EMS, SWITZERLAND FEBRUARY 1990 – APRIL 1990
Development of improved waste heat removal concepts for polymer and synthetic fiber production at a Swiss chemical engineering company.

Consulting

- Joulea, Atlanta, GA: Consultant for building energy startup company, since 2023.
- Cala Systems, Boston, MA: Consultant for heat pump hot water heater startup company, since 2023.
- *Google, Inc. v. EcoFactor:* Representing Google as defendant in patent infringement case in the International Trade Commission regarding smart thermostats as technical expert, 2019-2022.
- *TAS Energy Inc. v. Stellar Energies Americas, Inc.*: Representing TAS Energy Inc. as plaintiff in patent infringement action regarding gas turbine inlet cooling technology as technical expert; case settled Nov 2016 (May 2015 - Nov 2016).
- *Carrier Corp. v. Goodman Global, Inc., et al* (D. Del): Representing Carrier as plaintiff in patent infringement action regarding HVAC technology as technical expert; jury trial won September 2014 (2012-2014).
- Robert Bosch GmbH: Investigation of short-term forecasting models and advanced algorithms for energy efficiency in commercial buildings (2007-2013).

- Belimo Automation AG: Evaluation of novel control valve designs (2007-today).
- Boehringer Ingelheim Pharmaceuticals: Optimal design and control of a chilled-water thermal energy storage system (2006-2007).
- Fraunhofer Institute for Solar Energy Systems: Simplified hybrid modeling of buildings and associated parameter estimation, automated fault detection and diagnostics (2006-today).
- IMR Consulting: Modeling and simulation of coupled hydraulic and thermal networks (2005 – 2007).
- MCE Stangl GmbH: Consultant for energy services (2005 – 2007).
- Johnson Controls, Inc.: Consultant assisting in the preparation of proposals for federal energy savings performance contracts, in particular for the U.S. Air Force and U.S. Army. Contributions include energy engineering, development of measurement and verification methods according to FEMP guidelines, and proposal writing (2000 – 2005).

Education

University of Colorado	**Doctor of Philosophy** – Ph.D. Civil Engineering – Building Systems Engineering, 1995 Dissertation: *"Evaluation of Optimal Control for Ice Storage Systems"* Advisor: Moncef Krarti
Technical University of Berlin	**Diplom-Ingenieur** – Dipl.-Ing. Mechanical Engineering (Energy and Processes), 1992 Thesis: *"Performance Characterization and Optimization of a Ceramic Vehicular Gas Turbine on the Basis of Turbo-Charger Units"* Advisor: Helmut Pucher
Oregon State University	**Master of Science** – M.S. Mechanical Engineering (Thermal Sciences), 1991 Project: *"Order-of-Magnitude Analysis: An Approximate Approach to the Solution of Selected Engineering Problems"* Advisor: Murty Kanury
Technical University of Berlin	**Vor-Diplom** – B.S. Mechanical Engineering (Energy and Processes), 1989

Professional Registration

ASHRAE-certified High-Performance Building Design Professional (HBDP).

Licensed professional mechanical engineer in Nebraska (license no. E-10692).

Honors and Awards

- University of Colorado College of Engineering and Applied Science **Dean's Faculty Fellowship** 2024
- **Fulbright Distinguished Chair in Science, Technology, and Innovation** at CSIRO in Newcastle, New South Wales, Australia 2022
- Interim Co-**Director** Renewable and Sustainable Energy Institute 2020-2021
- Renewable and Sustainable Energy Institute **Associate Director** for Energy Systems for the Built Environment 2017-2020
- Charles Victor Schelke **Endowed Chair** 2017

- University of Colorado Architectural Engineering **Appreciation Award** 2015
- University of Colorado CEAE Department **Service Award** 2014
- Endowed **Lewis-Worcester Faculty Fellowship** 2014-2018
- Architectural Engineering Institute (AEI) 2013 Conference **Best Paper Award**
- University of Colorado CEAE Department **Distinguished Achievement Award** 2012
- Colorado Cleantech Industry Association **Research and Commercialization Award** 2011
- University of Colorado CEAE Department **Research Development Award** 2011
- Renewable and Sustainable Energy Institute **Founding Fellow and Executive Committee Member** 2010
- University of Nebraska-Lincoln College of Engineering **Holling Family Distinguished Teaching Award for Innovative Use of Instructional Technology** 2006
- University of Nebraska-Lincoln College of Engineering **Holling Family Teaching Award** 2006
- University of Nebraska at Omaha **Alumni Outstanding Teaching Award** 2006
- American Society of Mechanical Engineers (ASME): **Best Paper Award**, International Solar Energy Conference 2004, Portland, Oregon
- UNL College of Engineering **Faculty Fellowship** for 2003 and 2004
- American Society of Mechanical Engineers (ASME): **Best Paper Award**, National Solar Energy Conference 2002, Reno, Nevada.
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE): **New Investigator Award** for the year 2001 (one per year).
- American Society of Mechanical Engineers (ASME): **Best Paper Award**, International Solar Energy Conference 1996, San Antonio, Texas.
- Texas A&M University, College Station, Texas: **Winner of Energy Predictor Shootout II** in team effort with Robert H. Dodier, 1995.
- **Fulbright Scholarship** for graduate study at Oregon State University 1990 – 1991.

Grants

- NSF Industry University Collaborative Research Center (IUCRC): "Performance Evaluation and Grid Impacts of Intelligent Field Devices and Next-Generation Heat Pumps with an Application to Adaptive Reuse of Commercial Buildings" $60,000, 2024-2025, G. Henze (PI).
- DOE Renew America Nonprofits: $8,000,000, 2024-2028, M. Krarti (PI), G. Henze and J. Zhai (Co-PIs).
- NSF Industry University Collaborative Research Center (IUCRC): "Building Energy Smart Technologies (BEST)" $375,000, 2021-2026, M. Krarti (PI), K. Baker, G. Henze, and J. Zhai (Co-PIs).
- DOE STTR Phase II: "P2P Transactions with Demand Flexibility for Increasing Solar Utilization." $994,698 (UCB share: $325k), 2020-2022, V. Cushing (PI), G. Henze & G. Pavlak (Co-PIs).
- UCB CEAS Seed Grant: "Building Energy and Water Conservation Benefits from Peroxide Enhanced Germicidal Irradiation (PEGI)." $92,449, 2019-2020, M. Hernandez (PI), G. Henze & K. Linden (Co-PIs).
- National Renewable Energy Laboratory: "The Relationship between Energy Efficiency and Demand Response." $256,919, 2019-2020.
- DOE EERE BTO BENEFIT: "Multiobjective Deep Reinforcement Learning for Grid-Interactive Energy-Efficient Buildings." $1,579,684, 2019-2023, A. Bernstein (PI), G. Henze (Co-PI).

- DOE ARPA-E: “Battery-Free RFID Sensor Network with Spatiotemporal Pattern Network Based Data Fusion System for Human Presence Sensing.” $2,000,000, 2018-2021.
- WSP USA: “Evaluating the Value of Intelligent Building Systems.” $72,981, 2017-2018.
- National Renewable Energy Laboratory: “Reduced Order Models for Fuel Cell Integrated Commercial Buildings.” $11,659, 2017.
- Construction Industry Institute: “Modeling and Optimizing the Lifecycle Business Return of Building Investments.” $128,330, 2017-2018.
- National Renewable Energy Laboratory: “Building-to-Grid Model Development for Advanced Sensing in the Distribution Grid.” $195,000, 2016-2019.
- National Renewable Energy Laboratory: "Load Disaggregation for Distributed Energy Resource Siting and Optimization" $39,176, 2016.
- National Renewable Energy Laboratory: “Hybrid Model-Based and Data-Driven Fault Detection and Diagnostics for Buildings.” $49,149, 2014-2015.
- Belimo, Switzerland: “Investigation Central Plant Benefits of Energy Valves.” $37,630, 2014.
- National Renewable Energy Laboratory: “Energy Signal Tool.” $82,762 , 2013-2014.
- Belimo, Switzerland: “Investigation Central Plant Benefits of Energy Valves.” $36,000, 2013.
- National Renewable Energy Laboratory: “Energy Systems Integration (ESI) Visualization Framework.” $78,180, 2013.
- The Energy Research Corporation: “Monitoring Based Commissioning Using Calibrated Building Models.” $93,291, 2012-2013.
- Belimo, Switzerland: “Investigation Central Plant Benefits of Energy Valves.” $34,000, 2012.
- NSF EAGER: “Centralized Control of Large-Scale Distributed Sensor/Actuator Networks: Self-organizing Amorphous Facades.” $120,000, 2012-2013, G.P. Henze (Co-PI) with Nikolaus Correll (PI).
- Clean Urban Energy, Inc.: “Buildings2Grid: Integration of Commercial Buildings Operation with the Electric Grid System.” $376,465, 2011-2013.
- Belimo, Switzerland: “Experimental Investigation of Pressure-Independent Control Valves.” $32,000, 2011.
- Clean Urban Energy, Inc.: “Reduced Order Modeling for Dynamic Building Control in Response to Real-Time Utility Signals.” $80,519, 2011.
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE): “Stochastic Control Optimization of Mixed-Mode Buildings for U.S. Climates,” $297,866, 2010-2012, G.P. Henze (PI), G.S. Brager (co-PI, University of California), C. Felsmann (Co-PI, Technical University of Dresden).
- ITG Dresden, Ltd.: “Control of Thermally Activated Building Structures,” $47,540, 2010.
- Tendril Networks, Inc.: “Evaluation and Validation of Smart Grid Automated Control Strategies for Residential Buildings,” $37,484, 2009-2010.
- Clean Urban Energy: “Dynamic Building Control in Response to Real-Time Utility Signals.” $77,556, 2009.
- U.S. Green Building Council: “HVAC Control Strategies for Mixed Mode Buildings,” $249,915, 2009-2011, G.P. Henze (PI), C. Felsmann (Co-PI, Technical University of Dresden), J. Pfafferott (co-PI, Fraunhofer Institute for Solar Energy Systems).
- German Ministry for Commerce and Technology (Bundesministerium für Wirtschaft und Technologie): “Low-Exergy System Integration ,” 2008-2011, level of funding: €1,170,000 ($1,837,000), Co-PI. (PI: J. Pfafferott, Fraunhofer Institute for Solar Energy Systems with German industrial partners Johnson Controls, DS-Plan, ITG Dresden, and others.).
- U.S. Department of Education: “Nebraska Graduate Assistance in Areas of National Need (GAANN) in Engineering and Assistive Technology,” 2007-2010, level of funding $383,643, Co-PI.
- German Ministry for Commerce and Technology (Bundesministerium für Wirtschaft und Technologie): “ModBen –Development of a Procedure for Model-Based Building Performance Analysis,” 2006-2010,

level of funding: €1,200,000 ($1,680,000), Co-PI. (PI: C. Neumann, Fraunhofer Institute for Solar Energy Systems with German industrial partners M+W Zander and Ennovatis).

- U.S. Department of Energy – National Energy Technology Laboratory: "Development of an Accurate Feed-Forward Temperature Control Tankless Water Heater," 2005 – 2008, funding level: $456,395, Consultant.
- Johnson Controls, Inc.: "Evaluation of Modelica for Building Control Systems Analysis," 2005-2007, level of funding: $90,000.
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE): "Evaluation of Building Thermal Mass Savings (1313-TRP)," 2004 – 2006, level of funding: $89,101.
- University of Nebraska – Lincoln Strategic Cluster Research Grant: "Integrated Wireless Systems for Assistive Technology", 2004 – 2006, funding level: $80,000.
- State Technologies Advancement Collaborative Solicitation 03-STAC-1: "Real-Time Predictive Optimal Control of Active and Passive Building Thermal Storage Systems" STAC. 2004 – 2005, level of funding: $151,656, Co-PI.
- U.S. Department of Energy – National Energy Technology Laboratory: "Converging Redundant Sensor Network Information for Improved Building Control", 2004 – 2006, funding level: $354,440, Co-PI.
- University of Nebraska – Lincoln: Layman Award, 2003, level of funding: $10,000.
- Nebraska Research Initiative – "Development of the University of Nebraska Center for Building Integration", 2002 - 2004 level of funding: $130,732, Co-PI.
- U.S. Department of Energy – National Energy Technology Laboratory: "Analysis, Laboratory Testing, and Field Implementation of Predictive Optimal Control of Active and Passive Building Thermal Storage Inventory", 2001 – 2004, level of funding: $401,179.
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE): "Evaluation of Predictive Optimal Control of Active and Passive Building Thermal Storage Inventory" (New Investigator Award for 2001), 2001 – 2002, level of funding: $61,185.
- University of Nebraska – Lincoln: Layman Award, 2001, level of funding: $7,000.
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE): "Metering Residential Hot Water by End Use (Development of Standard Protocol)," ASHRAE 1172-TRP, 2000 – 2003, level of funding: $70,354, Co-PI.

Professional Memberships and Service

- Co-Chair for Workshop on Intelligent Building Operations, Purdue University, July 2024
- Co-Chair for Workshop on Intelligent Building Operations, University of Colorado, August 2019 and 2023
- Co-Chair for Workshop on Intelligent Building Operations, Purdue University, June 2018
- Associate Editor for IEEE Control Systems Letters 2017 – 2020
- Co-Chair for Workshop on Intelligent Building Operations, Purdue University, June 2016
- Editorial Board Member for Journal Building Performance Simulation since 2015
- Associate Editor for ASCE Journal of Architectural Engineering 2015 – 2019
- Associate Editor of Elsevier Journal *Renewable Energy* in the topical area of "Low Energy Architecture and Buildings" for 2014 – 2015.
- Renewable and Sustainable Energy Institute (RASEI) Executive Committee Member
- Chair for Workshop on Intelligent Building Operations, Boulder, June 2013
- Taskforce on Applications of Approximate Dynamic Programming and Reinforcement Learning for the IEEE Computational Intelligence Society - ADPRL Technical Committee
- Chair for Workshop on Model Predictive Control in Buildings, Montreal, June 2011.

- American Society of Mechanical Engineers Solar Energy Division Technical Committee Chair for Conservation and Solar Buildings for 2008-2014.
- Associate Editor of the *Journal of Solar Energy Engineering* in the topical area of "Conservation and Solar Buildings" for 2008-2014.
- Member of ASHRAE committee charged with developing a certification program on Sustainable Building Design and Operation
- American Society of Heating, Refrigerating, and Air Conditioning Engineers
  - ✓ Technical Committee 7.5 Smart Building Systems: member
  - ✓ Technical Committee 1.4 Control Theory: member

Patents

Records of Invention

R. Cruickshank, G.P. Henze, A.R. Florita, C.D. Corbin, ROI-19-68 Joint optimization of electricity generation and use, April 1, 2019

Provisional Patent Application

G.P. Henze et al., Wireless Home Identification and Sensing Platform for Energy Reduction, Application No. 18/557,369 submitted Dec 31, 2023, US PTO.

Awarded

G.S. Pavlak, G.P. Henze, V.J. Cushing, Systems and Methods using Decision Analysis for Controlling Energy Consumption and Facilitating Building Participation in Ancillary Energy Markets, patent no. US11101651, awarded Aug 24, 2021, US PTO.

G.P. Henze, V.J. Cushing, C.D. Corbin, and S. Plamp, Integration of Commercial Building Operations with Electric System Operations and Markets, patent no. US10373082B2, awarded Aug 6, 2019, US PTO.

V.J. Cushing and G.P. Henze, Optimization of Attributes in a Portfolio of Commercial and Industrial Facilities, application no. 13/405,153, pending

C.J. Sloup, D. Karnes, and G.P. Henze (2011) Real-Time Global Optimization of Building Setpoints and Sequence of Operation, patent no. US7894943B2, awarded Feb 22, 2011, US PTO.

Publications

Google Scholar *h*-index = 54 with over 9200 citations (accessed Dec 17, 2024)

Books

T. Agami Reddy and Gregor P. Henze (2023) "Applied Data Analysis and Modeling for Energy Engineers and Scientists." https://link.springer.com/book/10.1007/978-3-031-34869-3, Springer Science & Business Media.

Book Chapters

Henze, G.P. (2019) "Modelling and Simulation in Building Automation Systems." Chapter 14 in *Building Performance Simulation for Design and Operation 2/e* (eds. J.L.M. Hensen and R. Lamberts), Taylor and Francis.

Henze, G.P. and C. Neumann (2012) "Modelling and Simulation in Building Automation Systems." Chapter 14 in *Building Performance Simulation for Design and Operation* (eds. J.L.M. Hensen and R. Lamberts), Taylor and Francis.

Journal Publications – Published, In Print, or Accepted for Publication

Henze, G. P., Kircher, K. J., & Braun, J. E. (2024). Why has advanced commercial HVAC control not yet achieved its promise? *Journal of Building Performance Simulation*, 1–12. https://doi.org/10.1080/19401493.2024.2429728

Nicholas Long; Katherine Fleming; Alex Swindler; Andrew Held; Robin Mitchell; Gregor P Henze: Advances in Building Data Management for Building Performance Standards using the SEED Platform, Developments in the Built Environment, Volume 20, 2024, https://doi.org/10.1016/j.dibe.2024.100530.

Zakia Afroz, Hao Wu, Subbu Sethuvenkatraman, Gregor Henze, Rune Grønborg Junker, Matt Shepit, (2024) "A study on price responsive energy flexibility of an office building under cooling dominated climatic conditions." Energy and Buildings, Volume 316, 2024, 114359, ISSN 0378-7788, https://doi.org/10.1016/j.enbuild.2024.114359.

Andrew Klavekoske, Vincent Cushing, Gregor Henze "Evaluation of the Demand Flexibility Potential through Joint Optimization of Building Thermal Response and Indoor Air Quality in Commercial Buildings", Journal of Engineering for Sustainable Buildings and Cities, accepted May 28, 2024.

Linsey C. Marr, Christopher D. Cappa, William P. Bahnfleth, Timothy H. Bertram, Richard L. Corsi, Matthew J. Ellis, Gregor P. Henze, Gabriel Isaacman-VanWertz, Shelly L. Miller, Theresa Pistochini, William D. Ristenpart, Marina E. Vance, and Peter J. Vikesland (2024): Toward Clean and Green Buildings, Journal of Environmental Engineering, Volume 150, Issue 9, https://doi.org/10.1061/JOEEDU.EEENG-7727

Michael D. Murphy, Amy Allen, Gregor P. Henze, Nicholas L. Long, "Optimal environmental and economic performance trade-offs for fifth generation district heating and cooling network topologies with waste heat recovery", Energy Conversion and Management, Volume 309, 2024, 118322, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2024.118322.

Dey, Sourav, and Henze, Gregor P. "Reinforcement Learning Building Control: An Online Approach with Guided Exploration Using Surrogate Models." ASME. *J. Eng. Sustain. Bldgs. Cities*. February 2024; 5(1): 011005. https://doi.org/10.1115/1.4064842

Tim Diller, Anton Soppelsa, Roberto Fedrizzi, Nagpal Himanshu, Gregor Henze (2023) "A Dynamic Programming Based Method for Optimal Control of a Cascaded Heat Pump System with Thermal Energy Storage." Optimization and Engineering, Springer, https://doi.org/10.1007/s11081-023-09853-5.

Nagy, Zoltan, Gregor Henze, Sourav Dey, Javier Arroyo, Lieve Helsen, Xiangyu Zhang, Bingqing Chen et al. (2023) "Ten questions concerning reinforcement learning for building energy management." Building and Environment, 110435.

Sourav Dey, Thibault Marzullo, Xiangyu Zhang, Gregor Henze (2023). Reinforcement Learning Building Control Approach Harnessing Imitation Learning, Energy and AI. https://doi.org/10.1016/j.egyai.2023.100255.

Sourav Dey, Thibault Marzullo, Gregor Henze (2023). Inverse Reinforcement Learning Control for Building Energy Management; Energy and Buildings. https://doi.org/10.1016/j.enbuild.2023.112941

Li R, Satchwell AJ, Finn D, Christensen TH, Kummert Michaël, Le Dréau Jérôme, Lopes RA, Madsen H, Salom J, Henze G, Wittchen K, Ten questions concerning energy flexibility in buildings, Building and Environment (2022), doi: https://doi.org/10.1016/j.buildenv.2022.109461.

Allen, A., Henze, G., Baker, K., Pavlak, G., & Murphy, M. (2022). An optimization framework for the network design of advanced district thermal energy systems. *Energy Conversion and Management*, *266*, 115839.

Thibault Marzullo, Sourav Dey, Nicholas Long, José Leiva Vilaplana & Gregor Henze (2022) A high-fidelity building performance simulation test bed for the development and evaluation of advanced controls, Journal of Building Performance Simulation, 15:3, 379-397, DOI: 10.1080/19401493.2022.2058091

Sin Yong Tan, Margarite Jacoby, Homagni Saha, Anthony Florita, Gregor Henze, Soumik Sarkar (2022) Multimodal Sensor Fusion Framework for Residential Building Occupancy Detection, *Energy and Buildings*, 111828.

Jacoby, Margarite, Sin Yong Tan, Mohamad Katanbaf, Ali Saffari, Homagni Saha, Zerina Kapetanovic, Jasmine Garland, Anthony Florita, Gregor Henze, Soumik Sarkar, and Joshua Smith. 2021. "WHISPER: Wireless Home Identification and Sensing Platform for Energy Reduction" *Journal of Sensor and Actuator Networks* 10, No. 4: 71. https://doi.org/10.3390/jsan10040071

Robert Cruickshank, Gregor Henze, Anthony Florita, Charles Corbin & Killian Stone (2021): Estimating the value of jointly optimized electric power generation and end use: A study of ISO-scale load shaping applied to the residential building stock, *Journal of Building Performance Simulation*, DOI:10.1080/19401493.2021.1998222

Maggie Jacoby, Sin Yong Tan, Gregor Henze, and Soumik Sarkar (2021). A high-fidelity residential building occupancy detection dataset. Nature *Scientific Data*, 8(1), 1-14.

Cory Mosiman, Gregor Henze, and Herbert Els (2021) "Development and Application of Schema Based Occupant-Centric Building Performance Metrics." *Energie*s, 14(12), 3513; https://www.mdpi.com/1996-1073/14/12/3513, https://doi.org/10.3390/en14123513.

Yang, Shiyu, Man Pun Wan, Bing Feng Ng, Swapnil Dubey, Gregor P. Henze, Wanyu Chen, and Krishnamoorthy Baskaran. "Model predictive control for integrated control of air-conditioning and mechanical ventilation, lighting and shading systems." *Applied Energy* 297 (2021): 117112.

Fleschutz, Markus, Markus Bohlayer, Marco Braun, Gregor Henze, and Michael D. Murphy. "The effect of price-based demand response on carbon emissions in European electricity markets: The importance of adequate carbon prices." *Applied Energy* 295 (2021): 117040.

Nicholas Long, Fatema Almajed, Justus von Rhein & Gregor Henze (2021) Development of a metamodelling framework for building energy models with application to fifth-generation district heating and cooling networks, Journal of Building Performance Simulation, 14:2, 203-225, DOI: 10.1080/19401493.2021.1884291

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Henze, G.P., A.R. Florita, M.J. Brandemuehl, C. Felsmann and H. Cheng (2009) "Advances in Near-Optimal Control of Passive Building Thermal Storage." Proceedings of the ASME 3rd International Conference on Energy Sustainability, July 19-23, 2009, San Francisco, CA.

Yosten, A.J. and G.P. Henze, (2009) "Modeling and Optimal Control of Distributed Generation Systems for Demand and Energy Management." Proceedings of the ASME 3rd International Conference on Energy Sustainability, July 19-23 2009, San Francisco, CA.

Tiller, D.K., G.P. Henze, X. Guo and C.E. Waters (2009) "Sensor Networks for Lighting Control." Proceedings of the ASME 3rd International Conference on Energy Sustainability, Paper No. 90269, July 19-23 2009, San Francisco, CA.

Tiller, D.K. and G.P. Henze (2005) "Converging Redundant Sensor Network Information for Improved Building Control." Proceedings of CLIMA2005 in Lausanne, Switzerland.

Tiller, D.K. and G.P. Henze (2005) "Construction Trends and Current Domestic Hot Water Use in the United States." Proceedings of CLIMA2005 in Lausanne, Switzerland.

Becker, M., G.P. Henze, A. Köhler, R. Koenigsdorff, M. Lehnertz, H. Scherer (2005) “Integrated Autonation and Simulation Test Environments for Building Energy Systems.” Proceedings of CLIMA2005 in Lausanne, Switzerland.

Liu, S. and G.P. Henze (2005) “Calibration of Building Models for Supervisory Control of Commercial Buildings.” Proceedings of the 2005 International Building Performance Simulation Association Conference in Montreal, Canada; pp. 641-648.

Le, T.H., G. Knabe, and G.P. Henze (2005) “Fault Detection and Diagnosis of Control Strategies for Air-Handling Units.” Proceedings of the 2005 International Building Performance Simulation Association Conference in Montreal, Canada, pp. 609-616.

Liu., S. and G.P. Henze (2005) “Reinforcement Learning Control for Building Active and Passive Thermal Storage Inventory.” Proceedings of the 2005 International Solar Energy Conference in Orlando, Florida; American Society of Mechanical Engineers, New York, New York.

Henze, G.P., T.H. Le, and A.R. Florita (2005) “Sensitivity Analysis of Optimal Building Thermal Mass Control.” Proceedings of the 2005 International Solar Energy Conference in Orlando, Florida; American Society of Mechanical Engineers, New York, New York.

Liu, S. and G.P. Henze (2004) “Investigation of Reinforcement Learning for Building Thermal Mass Control.” Proceedings of SimBuild 2004 in Boulder, Colorado; International Building Performance Simulation Association.

Henze, G.P. (2004) “Trade-Off between Energy Consumption and Utility Cost in the Optimal Control of Active and Passive Building Thermal Storage Inventory.” Proceedings of the 2004 International Solar Energy Conference in Portland, Oregon,pp. 111-119; American Society of Mechanical Engineers, New York, New York.

Henze, G.P. (2004) “Effect of Design Parameters on the Performance of Thermal Energy Storage Systems.” Proceedings of the 2004 International Solar Energy Conference in Portland, Oregon, pp. 135-143; American Society of Mechanical Engineers, New York, New York.

Zhou, G., M. Krarti, and G.P. Henze (2004) “Parametric Analysis of Active and Passive Building Thermal Storage Utilization.” Proceedings of the 2004 International Solar Energy Conference in Portland, Oregon, pp. 193-203; American Society of Mechanical Engineers, New York, New York.

Tiller, D.K., G.P. Henze, and X. Guo (2004) “Online Domestic Hot Water End Use Database (1172-RP).” ASHRAE Transactions, Vol. 110, Part 2, pp. 682-689, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Atlanta, Georgia.

Zhou, G., P. Ihm, M. Krarti, S. Liu, and G.P. Henze (2003) “Integration of Optimization Routines Within EnergyPlus”, Proceedings of the Eighth International IPBSA Conference Building Simulation 2003, pp. 1475-1482, Eindhoven, Netherlands.

Ihm, P., M. Krarti, and G.P. Henze (2003) “Integration of a Thermal Energy Storage Model within EnergyPlus”, Proceedings of the Eighth International IPBSA Conference Building Simulation 2003, pp. 531-538, Eindhoven, Netherlands.

Henze, G.P. and R.H. Dodier (2002) “Adaptive Optimal Control of a Grid-Independent Photovoltaic System.” Proceedings of the 2002 International Solar Energy Conference in Reno, Nevada; pp. 139-148, American Society of Mechanical Engineers, New York, New York.

Henze, G.P. (2002) “Parametric Study of a Simplified Ice Storage Model under Conventional and Optimal Control Strategies.” Proceedings of the 2002 International Solar Energy Conference in Reno, Nevada; pp. 83-95, American Society of Mechanical Engineers, New York, New York.

Krarti, M., G.P. Henze, and D. Bell (1999) “Planning Horizon for a Predictive Optimal Controller for Thermal Energy Storage Systems.” ASHRAE Transactions, Vol. 105, Part 2, pp. 543-552.

Henze, G.P. and M. Krarti (1999) “The Impact of Forecasting Uncertainty on the Performance of a Predictive Optimal Controller for Thermal Energy Storage Systems.” ASHRAE Transactions, Vol. 105, Part 2, pp. 553-561.

Henze, G.P. and M. Krarti (1996) “Ice Storage System Controls for the Reduction of Operating Costs and Energy.” Proceedings of the 1996 International Solar Energy Conference in San Antonio, Texas; pp. 395-404, American Society of Mechanical Engineers, New York, New York.

Dodier, R.H. and G.P. Henze (1996) “Statistical Analysis of Neural Networks as Applied to Building Energy Prediction.” Proceedings of the 1996 International Solar Energy Conference in San Antonio, Texas; pp. 495-505, American Society of Mechanical Engineers, New York, New York.

Henze, G.P. and M. Laguna (1995) "Optimal Control of Thermal Energy Storage." Institute for Operations Research and the Management Sciences (INFORMS), New Orleans, Louisiana.

Henze, G.P., M. Laguna, and M. Krarti (1995) "Heuristics for the Optimal Control of Thermal Energy Storage." Proceedings of the Metaheuristics International Conference, Norwell, Massachusetts: Kluwer Academic Publishers.

Proceedings – Abstract Refereed as Basis for Acceptance

Henze, G.P. (2006) "Sustainable Building Design in the U.S.A." Seventh Biberach Forum Building Systems Engineering, Biberach, Germany, March 22, 2006.

Henze, G.P. (2002) "Order-of-Magnitude Analysis for the Approximate Solution of Engineering Problems." International Conference on Engineering Education, Manchester 2002.

Trade Magazines

Henze, G.P. (1996) "Performance Contracting in the Context of Political Agendas" (in German) Facility Management, Issue 5/96, pp. 66-68, Gütersloh: Bertelsmann Fachzeitschriften GmbH.

Moehl, U. and G.P. Henze (1996) "Investing Without Financing, Performance Contracting Increases the Value of Buildings" (in German) Contracting Wärmedienst, Issue 5/96, pp. 37-44, Düsseldorf: Krammer Verlag.

Contract Reports

Henze, G.P., G.S. Pavlak, A.R. Florita, R.H. Dodier, A.I. Hirsch (2015) "An Energy Signal Tool for Decision Support in Building Energy Systems." National Renewable Energy Laboratory Technical Report Number: NREL/TP-5500-63130. http://www.nrel.gov/docs/fy15osti/63130.pdf

Tanner, R.A, G.P. Henze, M. Pigman, K. Ackerley, G. Brager (2014) "Stochastic Control Optimization of Mixed-Mode Buildings." Final Report for ASHRAE Research Project 1597-RP, June 2014.

Henze, G.P., S. Pless, A. Petersen, N. Long, A.T. Scambos (2014) "Control Limits for Building Energy End Use Based on Engineering Judgment, Frequency Analysis, and Quantile Regression." National Renewable Energy Laboratory Technical Report Number: NREL/TP-5500-60020, February 2014. http://www.nrel.gov/docs/fy14osti/60020.pdf

ModQS-Heizsysteme in Bürogebäuden optimal betreiben - Automatisierte Fehlererkennung und -analyse verbessert den laufenden Gebäudebetrieb, Bundesministerium für Wirtschaft und Technologie (BMWi) Berlin, ISSN 0937 – 8367, May 2013.

Henze, G.P. and P.T. May-Ostendorp (2012) "United States Green Building Council Green Building Research Fund Final Report - HVAC Control Algorithms for Mixed Mode Buildings." United States Green Building Council.

Neumann, C. et al. (2011) "Modellbasierte Methoden für die Fehlererkennung und Optimierung im Gebäudebetrieb (English Translation: 'Model-Based Methods for Fault Detection and Optimization in Building Operations')." Fraunhofer ISE, Technical Report 0327410A-C.

Tiller, D.K., G.P. Henze and X. Guo (2008) "U.S. Department of Energy Cooperative Agreement DE-FC26-04NT41971 –Converging redundant sensor network information for improved building control – Final Report."U.S. Department of Energy – National Energy Technology Laboratory.

Henze, G.P., M.J. Brandemuehl, C. Felsmann, A. Florita, and H. Cheng (2007) "Final Project Report for ASHRAE Research Project 1313-RP: Evaluation of Building Thermal Mass Savings." American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Atlanta, Georgia.

Henze, G.P. and S. Liu (2005) "U.S. Department of Energy Cooperative Agreement DE-FC-36-03GO13026 - Real-Time Predictive Optimal Control of Active and Passive Building Thermal Storage Inventory - Final Report for Phase II: Laboratory Testing." U.S. Department of Energy – National Energy Technology Laboratory.

Henze, G.P. and M. Krarti (2005) "U.S. Department of Energy Cooperative Agreement DE-FC-26-01NT41255 – Predictive Optimal Control of Active and Passive Building Thermal Storage Inventory – Final Report." U.S. Department of Energy Information Bridge: www.osti.gov/servlets/purl/894509-GH9Mqf/.

Tiller, D.K. and G.P. Henze (2003). "Final Report on ASHRAE Project 1172-TRP: Metering Residential Hot Water by End Use (Development of Standard Protocol)." American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Atlanta, Georgia.

Henze, G.P. (2003) "ASHRAE New Investigator Award – Final Report." American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Atlanta, Georgia.

Krarti, M., M.J. Brandemuehl, and G.P. Henze (1995) "Final Project Report for ASHRAE 809-TRP: Evaluation of Optimal Control for Ice Storage Systems." American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Atlanta, Georgia.

Krarti, M., G.P. Henze, D. Bell, J.F. Kreider, M.J. Brandemuehl, and L.K. Norford (1997) "Model Based Optimizer Systems With TES: Final Report." JCEM Technical Report TR/97/15, University of Colorado at Boulder.

Selected Presentations

- Università di Napoli Federico II, Naples, Italy, June 6, 2024: Enriching Public Disclosure Data to Evaluate Advanced District Energy Systems with Thermal Storage for Grid-Interactive Efficient Districts.
- RLEM (Reinforcement Learning for Energy Management): Keynote Seminar – Opportunities and Challenges in Applying Advanced Building Controls. Nov 11, 2022, https://www.youtube.com/watch?v=u3g1HxZwh_s.
- EPRI.AI: Webinar – Opportunities and Challenges in Applying Advanced Building Controls. Sep 29, 2022.
- Organized panel discussion at CSIRO Energy Centre, Newcastle, Australia, June 2022: Creating a Zero Emission Community Pilot for the Hunter Region, https://webcast.csiro.au/#/videos/a1fe316e-fb67-4019-8f70-a45f37042190
- Università di Napoli Federico II, Naples, Italy, December 2021: Advanced Controls Test Bed – Or: How to Make Smart Buildings Come True
- La Sapienze Università di Roma, Rome, Italy, December 2021: Advanced Controls Test Bed – Or: How to Make Smart Buildings Come True
- Purdue University Mechanical Engineering Distinguished Lecture, April 2021: Seminar on Grid-Interactive Efficient Building Research at RASEI.
- Concordia University, Distinguished Lecture, January 2021: Seminar on Grid-Interactive Efficient Building Research at RASEI.
- IEEE Blockchain Transactive Energy Summit at the University of Colorado, February 2020: Seminar on Estimating the Value of Jointly Optimized Electric Power Generation and Residential Electrical Use as an Opportunity for Blockchain Enabled Transactions with Robert Cruickshank.
- Università di Napoli Federico II, Naples, Italy, October 2018: Overview seminar on research
- SDEWES 2018, Palermo, Sicily, October 2018: Research seminar on Modeling, Simulation, and Life Cycle Cost Analysis of Fifth-Generation District Heating and Cooling Networks.
- Libera Università di Bolzano, June 2018: Research seminar on End-to-End Modeling for Integration of Residential Building Portfolios with Electric Grid Operations.
- ETH Zurich, Department of Architecture, Chair of Information Architecture, July 2017: Research seminar on Building Response for Demand Flexibility - From Building Control to Electric Grid Integration.
- IBPSA Education Webinar: Building Automation in Building Simulation, June 2017: http://www.ibpsa.org/?page_id=695 or https://www.youtube.com/watch?v=eg-Y30xsR-A&feature=youtu.be
- IBPSA Building Simulation Applications Conference Bolzano, Italy, February 2017: Keynote seminar on Exploration of Building Model Complexity for Residential and Commercial MPC.
- IBPSA Building Simulation Applications Conference Bolzano, Italy, February 2017: Research seminar on Weather Scenario Generation for Stochastic Model Predictive Control using Vector Autoregressive Prediction.

- NREL Power Systems Engineering Center, September 2015: Research seminar on End-to-End Impact of Building Systems Response and Load Flexibility.
- International Institute for Energy Systems Integration (iiESI), August 2015: Research seminar on End-to-End Impact of Building Systems Response and Load Flexibility.
- Joint Research Center – Institute for Prospective Technological Studies, June 2015: Research seminar on Opportunities for Building Systems Response and Load Flexibility.
- Universidad de Sevilla, Spain, May 2015: Presentation of research seminar on the integrating of building energy consumption in smart grids focusing on residential building portfolios.
- Universidad de Sevilla, Spain, April 2015: Presentation of research seminar on the integrating of building energy consumption in smart grids focusing on commercial building portfolios.
- Universidad de Sevilla, Spain, November 2014: Presentation of research seminar on a probabilistic decision support system for building energy management.
- Joint Research Center – Institute for Prospective Technological Studies, September 2014: Research seminar on Impact of Large-Scale Distributed Residential HVAC Control Optimization on Electricity Grid Operation and Renewable Energy Integration.
- Portland State University, May 2014: Research seminar on Impact of Large-Scale Distributed Residential HVAC Control Optimization on Electricity Grid Operation and Renewable Energy Integration, available at https://youtu.be/Ai6vxETH7ZM
- Universidad de Sevilla, Spain, January 2014: Presentation of research seminar on Optimizing Building Operations in the Presence of Grid Feedback.
- University of California Davis, November 2013: Keynote speaker at "Green City. Smart City" German Innovation Seminars on Green Buildings: "Low-Energy Building Design and Optimal Operation"
- Santa Clara University, San Jose, California, November 2013: Keynote speaker at "Green City. Smart City" German Innovation Seminars on Green Buildings: "Net Zero Energy Buildings: State of the Industry"
- IEEE Power and Energy Society General Meeting in Vancouver, BC, July 2013: Presentation of one research seminar.
- ASHRAE Annual Meeting, Denver, Colorado, June 2013: Presentation of one research seminar.
- Intelligent Building Operations Workshop, Boulder, Colorado, June 2013: Presentation of four research seminars.
- RASEI 2013 Summer School on Energy Efficiency, Boulder, CO, May 2013: Presentation of one research seminar.
- University of Minnesota, Institute for Mathematics and Its Applications: Mathematical and Computational Challenges in the Control, Optimization, and Design of Energy-Efficient Buildings, Minneapolis, Minnesota, June 2013: Presentation of research seminar on Optimizing Building Operations in the Presence of Occupant-Driven Uncertainty and Grid Feedback
- Architectural Engineering Institute Conference, State College, PA, April 2013: Presentation of five technical papers.
- Institute for Energy Efficiency at the University of California at Santa Barbara, Oct 2012: Invited research seminar speaker on opportunities and challenges of advanced building controls.
- Joint Research Center of European Community, Ispra, Italy, June 2012: Invited research seminar speaker on opportunities and challenges of advanced building controls.
- Bosch Research and Technology Center, Pittsburgh, PA, April 2012: Invited research seminar speaker on advanced algorithms for energy efficiency in buildings.

- Society of Industrial and Applied Mathematics (SIAM) Conference on Uncertainty Quantification, Raleigh, NC, April 2012: Research seminar speaker on “Uncertainty Quantification for Better Commercial Buildings: From Design to Operation.”
- University of Colorado - Deming Center for Entrepreneurship, March 2012: Keynote speaker at “Entrepreneurship under the Microscope” annual celebration event.
- Nanyang Technological University, February 2012: Invited research seminar speaker on opportunities and challenges of advanced building controls.
- United States Green Building Council, December 2011: Invited research seminar speaker on mixed mode building design and associated advanced control.
- Lawrence Berkeley National Laboratory, Berkeley, CA, November 2011: Invited research seminar speaker on thermal mass and demand response.
- General Electric Co. (GE) Controls Symposium, Schenectady, NY, September 2011: Invited research seminar speaker on opportunities and challenges of advanced building controls.
- United Technologies Research Center, Hartford, CT, August 2011: Invited research seminar speaker on advanced building controls, past and current projects.
- Natural Resources Canada, Montreal, Canada, June 2011: Invited research seminar speaker on NZEB control.
- ASHRAE Annual Meeting, Montreal, Canada, June 2011: Presentation of research seminar.
- TetraTech, Inc. Annual Meeting, Denver, CO, May 2010: Invited dinner speaker on sustainable building design
- Lawrence Berkeley National Laboratory, Berkeley, CA, March 2010: Invited research seminar speaker
- 2009 Energy Symposium: Business and Regulatory Climate Check and Industry Forecast, Kansas City, Missouri, October 2009: Invited speaker on alternative energy technologies.
- ASME Energy Sustainability Conference, San Francisco, CA, July 2009: Presentation of three technical papers.
- Henze, G.P. 2009, “Advanced Building Control Strategies.” NSF CMMI Workshop on Multifunctional Materials and Distributed Renewable Energy for Sustainable Infrastructure, Honolulu, Hawaii, June 22, 2009.
- Henze, G.P. 2007, “European Perspectives and Experiences with High-Efficiency Commercial Buildings.” SolWest, John Day, Oregon, July 31, 2007.
- Henze, G.P. 2007, “Optimal Building Operation.” Eighth Biberach Forum Building Systems Engineering, Biberach, Germany, March 15, 2007.
- Henze, G.P. 2006, “Passive and Low-Energy Cooling Systems for Continental Climates.” Research seminar at the University of Applied Sciences Biberach, Germany, Nov. 10, 2006.
- Henze, G.P. 2006, “Optimal Building Operation.” Seminar at the federally funded workshop *Konzepte Konzepte zur optimierten Betriebsführung von Gebäuden* held in Frankfurt, Germany, July 7, 2006.
- Henze, G.P. 2006, “Impact of Adaptive Comfort Criteria and Heat Waves onOptimal Building Thermal Mass Control” Research seminar at the University of Applied Sciences Biberach, Germany, June 22, 2006.
- Henze, G.P. 2006, “Sustainable Building Design in the U.S.A.” Seventh Biberach Forum Building Systems Engineering, Biberach, Germany, March 22, 2006.
- Waters, C.E., K.W. Houser, D.K. Tiller, G.P. Henze, A.R. Florita, S. Plamp, 2005, "Center for Building IntegrationResearch,” American Council of Engineering Companies/Nebraska - Annual Conference, Omaha,Nebraska, June 9, 2005.
- Waters, C.E., K.W. Houser, D.K. Tiller, G.P. Henze, E. Bowden, M. Eble-Hankins., 2005, "Center for BuildingIntegration Research,” The Built Environment Conference, Omaha, Nebraska, March 3, 2005.

- Channel 7 KETV: Discussion of Ground-Source Heat Pump Heating of Residences in Nebraska, http://www.theomahachannel.com/news/4161240/detail.html; aired February 3, 2005.
- Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, November 2004: Invited speaker at the Research Symposium "Architectural Engineering".
- ASME Solar Energy Engineering Conference, Portland, OR, July 2004: Presentation of three technical papers.
- ASHRAE Annual Meeting, Nashville, TN, June 2004: Presentation of one technical paper and two seminars.
- ASHRAE Winter Meeting, Anaheim, CA, January 2004: Presentation of one technical paper.
- Eighth International IPBSA Conference Building Simulation 2003 in Eindhoven, Netherlands, August 2003: Presentation of two technical papers.
- American Institute of Architects, Omaha Chapter, November 2002: Invited panelist in discussion on the role of architecture in the community.
- Technical University of Dresden, Sep. 2002: Institute of Thermodynamics seminar series.
- ASHRAE Annual Meeting, Honolulu, HI, June 2002: Presentation of two technical papers.
- ASME Solar Energy Engineering Conference, Reno, NV, June 2002: Presentation of two technical papers.
- Pacific Energy Center, San Francisco, CA, December 2001: Invited speaker at day-long "Cool Thermal Storage" Seminar.
- Lawrence Berkeley National Laboratory, Berkeley, CA, December 2001: Invited speaker at Environmental Energy Technologies Division Seminar.
- ASHRAE Annual Meeting, Seattle, WA, June 1999: Presentation of one technical paper.
- ASHRAE Winter Meeting, San Francisco, CA, January 1998: Presentation of two technical papers.
- Umwelt-Campus Birkenfeld, Germany, October 1998: Invited speaker at day-long energy management workshop.
- Metaheuristics International Conference, Breckenridge, CO, July 1995: Presentation of one paper.

Graduate Student Advising

- Doctor of Philosophy (Ph.D.):
  - ✓ Nicholas Long (April 2024): Enriching Public Disclosure Data to Evaluate Advanced District Energy Systems with Thermal Storage for Grid-Interactive Efficient Districts
  - ✓ Sourav Dey (December 2023): Making Reinforcement Learning for Building Energy Management Practical
  - ✓ Amy Allen (August 2021): Development of a Topology Optimization Framework for District Thermal Energy Systems
  - ✓ Margarite Jacoby (August 2021): Battery-Free RFID Sensor Network with Spatiotemporal Pattern Network Based Data Fusion System for Human Presence Sensing
  - ✓ José Ramón Vázquez-Canteli (August 2020): Multi-Agent Reinforcement Learning for Demand Response and Load Shaping of Grid-Interactive Connected Buildings
  - ✓ Danielle Griego (April 2020): Implementing Community-Scale PV Systems as a Sustainable and Governable Urban Common

- ✓ Simone Buffa (January 2020): Advanced Control Strategies for District Heating and Cooling Systems
- ✓ Robert Cruickshank (August 2019): Estimating the Value of Jointly Optimized Electric Power Generation and Residential Electrical Use
- ✓ Anthony Florita (May 2019): A Data-Driven Toolchain for the Operational Performance Analysis and Optimization of Buildings
- ✓ Mehmet Elci (July 2018): Smart Decentralized Solar District Heating
- ✓ Peng Zhao (May 2014): Dynamic Building-to-Grid Integration Through Combined Building System Resources for Frequency Regulation Service
- ✓ Marco Giuliani (April 2014): Development of An Energy Modeling Approach to Analyse Historical Building Performance
- ✓ Gregory Pavlak (April 2014): Building-to-Grid Integration through Commercial Building Portfolios Participating in Energy and Frequency Regulation Markets
- ✓ Charles Corbin (April 2014): Assessing Impact of Large-Scale Distributed Residential HVAC Control Optimization on Electricity Grid Operation and Renewable Energy Integration
- ✓ Ryan Tanner (Jan 2014): Stochastic Optimization of Building Control Systems for Mixed-Mode Buildings
- ✓ Sebastian Burhenne (Nov 2013): Monte Carlo Based Uncertainty and Sensitivity Analysis for Building Performance Simulation
- ✓ Darcie Chinnis (Dec 2012): Exploration of a Dynamic Lighting Energy Modeling Algorithm for Data Collection Support
- ✓ Peter May-Ostendorp (May 2012): Offline Model Predictive Control of Mixed Mode Buildings for Near-Optimal Supervisory Control Strategy Development
- ✓ Dirk Jacob (Jan 2012): Optimization of Commercial Building Operations
- ✓ Abigail Watrous (Nov 2011): Environmental Impacts of the Socioeconomic Factors Affecting Energy Use for Rural Families and Migrant Workers in China
- ✓ Simeng Liu (May 2005): Analytical and Experimental Comparison of Model-Based, Model-Free, and Hybrid Learning Control of Active and Passive Building Thermal Storage Inventory

- Master of Science (M.S.):
  - ✓ Andrew Klavekoske (August 2022): Evaluating Synergistic Effects of Optimally Controlling Temperature and Ventilation in Grid-interactive Efficient Commercial Buildings
  - ✓ Logan Cole (August 2022): Recommendations for Measurement and Verification of Energy Savings from Advanced HVAC Control in Grid-Interactive Commercial Buildings Using Detailed Building Energy Models
  - ✓ Sourav Dey (August 2021): Comparison of Reinforcement Learning Algorithms Applied to High-Fidelity Building Models
  - ✓ Noah Klammer (August 2021): Model-Cluster-Reduce for Modular Multifamily Construction
  - ✓ José Ángel Leiva Vilaplana (August 2021): Evaluation of Model Order Reduction Complexity for Advanced Control of Commercial Buildings
  - ✓ Christina Turley (May 2020): Development and Evaluation of Occupancy-Aware HVAC Control for Residential Building Energy Efficiency and Occupant Comfort
  - ✓ Sade Odumuye (May 2019): Performance Evaluation of a Hybrid AFDD Tool for Small Commercial Buildings under Physical and Operational Model Parameter Mismatch
  - ✓ Adam McKittrick (May 2019): Cost Comparison between Annual and Monthly Net Zero Construction for Multifamily Buildings

- ✓ Fatema Almajed (May 2019): Increased Diversity of Reduced Order Models for Rapid Analysis of 5GDHC Networks for Commercial Buildings
- ✓ Nicholas Smith (May 2019): Modeling of a Wastewater Heat Recovery System
- ✓ John Nelson (Dec 2018): Evaluation of the passive cooling potential of mass inherent in medium to large commercial buildings
- ✓ Cory Mosiman (Aug 2018): Occupant-Centric Metrics for Occupant-Aware Buildings: An Evaluation Using Current Technologies
- ✓ Nicholas Long (Aug 2018): Reduced Order Models for Rapid Analysis of Ambient Loops for Commercial Buildings
- ✓ Catherine Dressler (Aug 2017): Data Science Modules for Energy and Buildings
- ✓ Philipp Bruggmann (April 2016): Grid-Friendly Zero Energy Building Design and Operation
- ✓ Eric Boxer (April 2015): Empirical Testing of an Energy Signal Tool: An Application of Building Energy Performance Monitoring
- ✓ Miles Ryan (Dec 2014): Optimal Control Strategy Selection for Intelligent Pressure Independent Control Valves
- ✓ Benjamin Brannon (Dec 2013): Modeling and Control Strategy Development of a Thermally Activated Residence
- ✓ Lincoln Harmer (May 2013): Monitoring Based Commissioning Using Calibrated Energy Models
- ✓ Bryce Buchanan (Nov 2012): Chilled Water Plant Taxonomy and Energy Valve Modeling
- ✓ Forest Reider (Apr 2012): Adaptive Real-Time Cooling Coil Curve Fitting Using a Computationally Simple Approach
- ✓ Jeanne Stratton (Apr 2012): Dominant Wavelengths Comprising 3- and 4-Color Combinations of LED and Laser White Light with Optimal CQS and LER
- ✓ Justin Bellucci (Apr 2012): Model Development and Experimental Validation of Pressure Independent Hydronic Circuits
- ✓ Jordan Mann (Oct 2011): Fault Detection and Diagnosis using a Probabilistic Modeling Approach
- ✓ Emily Rader (Aug 2011): Populating a Building Component Library with Retail Plug Load Model Snippets Derived from Measured Data
- ✓ James Hauswirth (Aug 2011): Design and Control of a Mixed-Mode University Building in a Continental Climate
- ✓ William Surles (May 2011): Development of a Control Analytic Tool for Evaluating Automated Residential Smart Grid Controls Strategies
- ✓ Simon Olivieri (Dec 2010): Evaluation of Commercial Building Demand Response Potential Using Optimal Short-Term Curtailment of HVAC Loads
- ✓ Rois Langner (Dec 2010): Managing the complexity of energy modeling with time efficiency: An investigation of driving factors that affect commercial high-rise office building energy consumption and demand
- ✓ Erik Greensfelder (August 2009): An Investigation of the Cost Savings Potentials Found Using Optimal Control of Passive Thermal Storage with Real Time Pricing and an Exploration of Temporal Carbon Emissions Signals
- ✓ Anthony Florita (August 2007): Development of a Simulation and Optimization Environment for the Analysis of Building Thermal Mass Control.
- ✓ Sandro Plamp (May 2006): Development of Learning Modules for Building Control and Automation Systems.

- ✓ Doreen E. Kalz (May 2004): Experimental Analysis of Model-Based Predictive Optimal Control for Active and Passive Building Thermal Storage Inventory.

- Master of Architectural Engineering (M.A.E.):
  - ✓ Matthew Pfannenstiel (2008): An Essential Utility System for a Healthcare Building in St. Luce, Madagascar.
  - ✓ Shaun Nienhueser (2008): Investigation of a Carbon-Neutral Medical Building through the Use of Cogeneration and Photovoltaics.
  - ✓ Jennifer Machacek (2008): Improving Abilities of Building Automation and Control Systems to Better Meet Client Needs.
  - ✓ Clayton Miller (2007): Technical and Economic Feasibility Study of the Peter Kiewit Institute in Attaining LEED-EB Certification.
  - ✓ Andrew Yosten (2007): Building Load Management by Means of Optimal Operation of Distributed Generation Equipment.
  - ✓ Daniel Karnes (2005): Investigation of Global Setpoint Optimization of HVAC Systems in an Office Building.
  - ✓ Chad Liechti (2005): Verification of Evaporative Cooling and Cooling Coil Model.
  - ✓ Stephanie Wright (2005): Life Cycle Cost Analysis of Cold Air Distribution Systems.
  - ✓ Daniel Barnes (2004): Modeling of Indirect/Direct Evaporative Cooling.
  - ✓ Kimberly Bunz (2004):A Comparative Study of Sustainable Building Design Practices inNorth America, Europe, and Asia.
  - ✓ Nick Rosenberry (2004): Guidelines for Selection of Chiller Technologies to Minimize Life Cycle Cost.
  - ✓ Nathan Sheets (2004): Comparison of Neural Network Based Controllers for Building Control.
- Diplom-Ingenieur (Dipl.-Ing.): Sebastian Kurz, Sandro Plamp, Jens Klostermann, Gregor Strassberger, Jobst Schoenmann, Ronny Goepfert, Magnus Fischer, Mathias Rieger, Mathias Roemhild.
- Post-Doctoral and Research Scholars: Thibault Marzullo (2020-today), Zahra Fallahi (2019-today), Matteo Saviozzi (2015), Ahmed Rizk (2007-2008), Robert Dodier (2004-2005), and Thoi Le (2004-2005).

Foreign Languages

German: native

Italian: intermediate (speaking, reading, writing)

Spanish: intermediate (speaking, reading, writing)